

# INTERNATIONAL SEARCH REPORT

Inte  
nal Application No  
PCT/GB2004/002643

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 F01N3/02 F01N3/20 F01N9/00 F01N11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 F01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 167 698 B1 (KING EDWARD THOMAS ET AL) 2 January 2001 (2001-01-02)	1,2,17, 18,21, 22,24,25
Y	column 3, line 5 – column 4, line 21; figure 1 -----	17,18
X	US 5 842 341 A (KIBE ET AL) 1 December 1998 (1998-12-01) column 2, line 62 – column 3, line 52; figures 2,3 -----	1,2,21, 24
X	US 6 487 852 B1 (MURPHY KEVIN RICHARD ET AL) 3 December 2002 (2002-12-03)	1,21,24
A	column 3, line 27 – column 5, line 7; figure 1 ----- -/-	2

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the International search

14 March 2005

Date of mailing of the International search report

29.03.2005

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 119 448 A (EMMERLING GERHARD ET AL) 19 September 2000 (2000-09-19) claim 1; figure 1 -----	1
A		2
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 01, 31 January 2000 (2000-01-31) & JP 11 270327 A (ISUZU MOTORS LTD), 5 October 1999 (1999-10-05) abstract -----	17,18
A	US 6 415 602 B1 (PATCHETT JOSEPH A ET AL) 9 July 2002 (2002-07-09) column 14, line 61 – column 15, line 42; figure 3 -----	3,4

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national application No.  
PCT/GB2004/002643

### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-4, 17-26

4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

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## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

### 1. claims: 1,2,17,18,21-26

System and method of calibrating a rate of reductant addition required to reduce NOx by measuring the temperature value of the exhaust gas and/or catalyst bed and correlating each value with a rate of reductant addition required to reduce NOx to N2 over the NOx reducing catalyst.

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### 2. claims: 3,4,19,20

System and method of controlling addition of reductant to a catalyst by providing an oxidation catalyst for oxidising the reductant downstream of the NOx reduction catalyst, measuring the inlet and the outlet temperature of the oxidising catalyst, determining the temperature difference and adjusting the rate of reductant addition so that said temperature difference is within a pre-determined range.

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### 3. claims: 5-12

System and method of regenerating a NOx-trap by contacting a fraction of the NOx-trap with a reductant while the NOx-trap as a whole remains in-line to the exhaust gas flow.

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### 4. claims: 13-16

System and method of reducing NOx by introducing a reductant at all vehicle speeds in a duty cycle at a rate correlating with a desired NOx conversion at average duty cycle speed and contacting the exhaust gas containing the NOx and the reductant with a NOx reduction catalyst.

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB2004/002643

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 6167698	B1	02-01-2001	CA EP	2329090 A1 1111211 A2		21-06-2001 27-06-2001
US 5842341	A	01-12-1998	JP DE DE EP	10047048 A 69720883 D1 69720883 T2 0822323 A1		17-02-1998 22-05-2003 11-12-2003 04-02-1998
US 6487852	B1	03-12-2002	DE GB	10240399 A1 2381762 A		30-04-2003 14-05-2003
US 6119448	A	19-09-2000	DE DE EP TR	19736384 A1 59810976 D1 0898061 A2 9801663 A2		25-02-1999 22-04-2004 24-02-1999 21-06-1999
JP 11270327	A	05-10-1999	NONE			
US 6415602	B1	09-07-2002	AU EP JP WO US US US US	9683701 A 1339955 A2 2004518053 T 0233232 A2 2002148220 A1 2002152745 A1 2002194841 A1 2004128982 A1		29-04-2002 03-09-2003 17-06-2004 25-04-2002 17-10-2002 24-10-2002 26-12-2002 08-07-2004